Malaria Laboratory Testing Algorithm

Malaria suspected based on clinical findings and exposure history

Immediately perform 1 or more of the following tests at local lab on a STAT basis:

- Rapid diagnostic test (ie, lateral flow immunochromatographic assay)
- MAL / Rapid Malaria/Babesia Smear
- LMALP / Malaria PCR with Parasitemia Reflex
- LCMAL / Malaria, Molecular Detection, PCR Only

Rapid results ~15 minutes; requires confirmation test

Gold Standard

- Microscopic examination of blood films
- Examination of both thick and thin blood films is the gold standard for malaria diagnosis

Optional, but subject to local availability

Nucleic acid amplification test (NAAT) (eg, PCR) if available on a STAT basis at a local laboratory

NEGATIVE

- Report preliminary (positive or negative) result to clinical team and indicate confirmatory test will follow
- Perform confirmatory testing by microscopic examination of blood films within 12-24 hours after rapid test
- NAAT can also be used for confirmation if available

- Consider repeat testing every 12-24 hours for a total of 3 evaluations to exclude malaria from the differential diagnosis

POSITIVE

- Order additional testing if needed to:
  - Confirm the diagnosis
  - Identify the infecting species
  - Determine the percentage of parasitemia

- MAL / Rapid Malaria/Babesia Smear
- LMALP / Malaria PCR with Parasitemia Reflex
- LCMAL / Malaria, Molecular Detection, PCR Only

- Order for:
  - Confirming the diagnosis
  - Determining percentage of parasitemia
  - When mixed infection with more than 1 Plasmodium species is suspected

- PCR option

Routine confirmatory testing

POSITIVE

NEGATIVE

- NAAT can also be used for confirmation if available

- Microscopic examination of blood films
  - Examination of both thick and thin blood films is the gold standard for malaria diagnosis

- Nucleic acid amplification test (NAAT) (eg, PCR) if available on a STAT basis at a local laboratory

- POSITIVE

- Rapid results ~15 minutes; requires confirmation test

- Optional, but subject to local availability

- GOLD STANDARD

- Microscopic examination of blood films
- Examination of both thick and thin blood films is the gold standard for malaria diagnosis

- NAAT can also be used for confirmation if available

- NEGATIVE

- Routine confirmatory testing

1 Malaria can be a rapidly fatal disease, particularly when due to Plasmodium falciparum, and less commonly P. vivax and P. knowlesi, and testing must be performed on a STAT basis. If testing is not available at the local laboratory, then arrangements must be made with another nearby laboratory that can provide immediate testing. A single negative test does not rule-out malaria. Consider repeat testing every 12 to 24 hours for a total of 3 evaluations if clinically indicated. Other laboratory tests (ie, complete blood count with differential, electrolyte panel, blood glucose, bilirubin, urinalysis, blood cultures) may be indicated to assess the severity of malaria and evaluate other potential causes of the patient's illness.

2 Rapid screening tests such as lateral flow immunochromatographic assays generally provide sensitive detection of high levels of P. falciparum and P. vivax infection (ie, ≥2,000 parasites/mcL), but lack sufficient sensitivity for detecting low levels of parasitemia (ie, <200 parasites/mcL) and other Plasmodium species.